

Appl. No.: 10/796,364
Amult. dated 01/20/2006
Reply to Office action of 11/23/2005

REMARKS/ARGUMENTS

In the final Office Action dated November 23, 2005, Claims 1-25 and 38-43 are pending. Claims 11-25 and 41-43 are rejected under 35 U.S.C. § 112, second paragraph. Claims 1, 4-7, and 38-40 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,859,128 to Brecz, et al. Claims 1, 4, 7, 8, 39, and 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,478,543 to Lyon in view of U.S. Patent No. 5,098,240 to Gapp. Claims 2, 5, 6, 9, and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lyon in view of Gapp and further in view of U.S. Patent No. 4,457,652 to Pratt. Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Lyon in view of Gapp and further in view of U.S. Patent No. 6,499,926 to Keener.

Applicants respectfully traverse the rejections for the following reasons. First, Applicants address the rejection of Claims 11-25 and 41-43 under § 112, second paragraph. Independent Claim 11 is directed to a blind composite-metal hybrid fastener for fastening structural members defining an aperture extending between first and second sides of the structural members. The fastener includes a shank extending between first and second ends, a deformable first head connected to the first end of the shank, and a second head connected to the second end of the shank, the second head having a cross-sectional dimension greater than a cross-sectional dimension of the aperture. Further, Claim 11 recites that "the first head defines a cross-sectional dimension less than the cross-sectional dimension of the aperture such that the first head is configured to be inserted through the aperture of the structural members from the first side to the second side of the structural members and thereafter deformed to a cross-sectional dimension greater than the cross-sectional dimension of the aperture by a blind relative adjustment between the second head and the shank at the first side of the structural members, thereby fastening the structural members between the first and second heads"

Regarding the rejection of Claim 11 under § 112, the Office Action states:

In claim 11, line 6-8 the second head is defined as connected to the shank and having a diameter greater than the dimension of the aperture thus equating the "second head" to

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element 22 in the drawings then, in lines 13-14 the "second head" is required to have a "blind relative adjustment between the second head and the shank" and is not seen where the second head as defined is capable of having any "adjustment" since it remains fixed in location.

Office Action, page 2.

Applicants respectfully submit that a "blind relative adjustment between the second head and the shank" does not require any movement of the second head. For example, as described in the present application and described in the response filed August 16, 2005, a blind relative adjustment between the second head and the shank can be accomplished by moving the shank relative to the second head, e.g., by screwing the stem 30 into the sleeve 12 as shown in Figure 2 of the present application. See page 10, lines 25-31 of the present application. Thus, while Applicants do not allege that the second head is incapable of being adjusted, Applicants do assert that the claim does not require any movement of the second head. Rather, the claim merely refers to "relative adjustment" between the second head and the shank, which can be accomplished by rotating the shank as described. Accordingly, Claim 11 is not indefinite per § 112 for this reason.

The Office Action further states regarding Claim 11:

Also in claim 11 it is unclear what is intended to be "a shank" (line 3) since there is no feature disclosed which includes both a first head connected and first end (line 5) and a second head connected at a second end (line 5). Indeed if it then member labeled (32) as required to arguably have the relative adjustment then the second head cannot be considered as connected thereto.

Office Action, page 2.

Applicants disagree. Claim 11 clearly refers to "a shank extending between first and second ends; a deformable first head connected to the first end of the shank; and a second head connected to the second end of the shank, the second head having a cross-sectional dimension greater than a cross-sectional dimension of the aperture." Further, to the extent that the

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Examiner asserts that the application fails to disclose such a feature, Applicants disagree. The application describes a shank 32 that extends between first and second ends 34, 36. The first end 34 defines a deformable head 38. The second end 36 is configured to be engaged to a sleeve 12, e.g., by virtue of corresponding threads 14, 40 provided on the inner surface of an aperture 16 extending through the sleeve 12 and on the outer surface of the shank 32 of the stem 30, respectively. The sleeve 12, in turn, defines another head 22, which has a cross-sectional dimension greater than a cross-sectional dimension of the aperture 54 that extends through structural members 50, 52. Thus, the deformable head 38 is connected at a first end of the shank 32 and the head 22 is connected at the opposite end of the shank 32. Accordingly, Applicants respectfully disagree with the above assertion made in the Office Action ("Indeed if it then member labeled (32) as required to arguably have the relative adjustment then the second head cannot be considered as connected thereto."). Although the head 22 is connected to the shank 32, the head 22 and shank 32 are still adjustable relative to one another. That is, the illustrated head and shank are connected by a threaded engagement, and a relative adjustment between the two members can be achieved by rotating either of the members relative to the other member.

The Office Action also states:

Furthermore, again claim 11 requires the "shank" to be the member labeled 12 in the drawings since it is the only member having a head with a dimension greater than the aperture however, then in claims 15 and 16 there is required a "sleeve" having internal threads and the "shank" to have external threads which is impossible in the disclosed device given the requirement of claim 11.

Office Action, page 3.

Applicants again disagree. Contrary to the above assertion set forth in the Office Action, Claim 11 recites that the second head is "connected to the second end of the shank" and has "a cross-sectional dimension greater than a cross-sectional dimension of the aperture." This is consistent with the disclosure set forth in the application. In fact, this feature of the invention is described in detail in the application. For example, as noted above, the sleeve 12 defines a head

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22, which has a cross-sectional dimension greater than a cross-sectional dimension of the aperture 54 that extends through structural members 50, 52. Further, the head 22 of the sleeve 12 is connected to the second end of the shank 32 by virtue of corresponding threads 14, 40.

Claim 15 requires "a sleeve extending from the second head, the sleeve defining a cross-sectional dimension smaller than the cross-sectional dimension of the aperture such that the sleeve is configured to be disposed through the aperture with the shank extending through the sleeve." Similarly, as illustrated and described in the present application, the sleeve 12 extends from the head 22 and defines a smaller cross-sectional dimension so that the sleeve 12 can be disposed through the aperture 54 with the shank 32 extending through the sleeve 12. Consistent with the recitation of Claim 16, the sleeve 12 defines a threaded aperture 16, and the shank 32 defines corresponding threads so that the shank 32 can be screwed into the sleeve 12 and compressed toward the sleeve 12 by rotation of the shank 32 relative to the sleeve 12.

Accordingly, Applicants respectfully submit that Claims 11-25 are not indefinite and can indeed be applied to the device disclosed in the present application. Therefore, withdrawal of the rejection of these claims under § 112 is requested.

Applicants now address the rejection of Claim 1 under § 112. In this regard, the Office Action states:

In claim 1, it is unclear what applicant intends by "integrated" because applicant argues that it means the pieces are unitary, by arguing the integrated feature defines over Berecz, yet then in claim 38 integrated is further limited to "an integral unitary metal member" which is what applicant has already argued integrated to mean. Thus the intended limitation of both "integrated" and "an integral metal member" are unclear since applicant interprets them as having the same meaning.

Office Action, page 3.

In an effort to clarify Claim 1 and remove any remaining concern on the part of the Examiner, Applicant has amended Claim 1 to incorporate the feature previously set forth in

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Claim 38 and has cancelled Claim 38. Claim 1 now recites that "the shank and the deformable first head are a single integral unitary metal member."

In the response filed August 16, 2005, Applicants distinguished the invention of Claim 1 from the Brecz, et al. by noting, among other things, that "Brecz, et al. does not teach or suggest that the thin-walled section 37 is defined by the mandrel 18. In contrast, Brecz, et al. specifically discloses that the thin-walled section 37 and mandrel 18 are separate components." Response filed August 16, 2005, page 11. In other words, the thin-walled section 37 of Brecz, et al. is not "an integrated deformable first head at the first end of" the mandrel 18, because the section 37 and mandrel 18 are instead two separate components. This distinction is further clarified by the above incorporation of the feature from Claim 38 into Claim 1. Therefore, Applicants submit that Claim 1 is not indefinite and request withdrawal of the rejection under § 112. Further, the cancellation of Claim 38 also addresses the Examiner's concern regarding that claim.

Applicants now address the rejections made under 35 U.S.C. § 102 and 103.

As previously described, Claim 1 is directed to a composite-metallic hybrid fastener for installation in an aperture through structural members for fastening the structural members. The fastener includes a metallic stem and a composite sleeve. The metallic stem defines "a shank extending between first and second ends, the stem defining an integrated deformable first head at the first end of the shank, such that the shank and the deformable first head are a single integral unitary metal member." The composite sleeve defines a second head that has "a cross-sectional dimension greater than a cross-sectional dimension of the aperture through the structural members."

Brecz, et al., on the other hand, describes a mandrel 18 with an anvil 20 at one end and, separately, a cylindrical sheath 34 having a thin-walled section 37. The Office Action indicates that the mandrel 18 and the thin-walled section 37 of Brecz, et al. correspond, respectively, to the metallic stem and the deformable first head of Claim 1. Applicants respectfully disagree. Claim 1 requires that the stem defines a shank and an integral unitary deformable head at one end of the shank. Brecz, et al. does not teach or suggest that the thin-walled section 37 is defined by the

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mandrel 18. In contrast, Brecz, et al. specifically discloses that the thin-walled section 37 and mandrel 18 are separate components.

The Office Action states:

In regards to claim 38 the deformable first head and shank are considered integral in the assembled state. . . .

Office Action, page 4.

Applicants respectfully disagree with the characterization of the thin-walled section 37 as being an integral and unitary part of the mandrel 18. Brecz, et al. specifically teaches that the thin-walled section 37 and mandrel 18 are provided as separate components, and the importance of the separation of the thin-walled section 37 and mandrel 18 is shown in Figure 3 of Brecz, et al., wherein the "sheath is initially expanded radially along a thin-walled portion thereof during blind head formation by the hydrostatic pressure generated by axial compression of the rivet's composite core." Abstract. That is, as shown in Figure 3, the thin-walled section 37 and mandrel 18 do not initially make contact, such that the initiation of the expansion of the thin-walled section 37 is achieved by expansion of the preform 11, not by contact between the thin-walled section 37 and mandrel 18. Given the separation of the thin-walled section 37 and mandrel 18, and the specific purpose for such separation in light of the teaching of Brecz, et al., it would not have been obvious for the thin-walled section 37 to be defined by or integrated with the mandrel 18.

Further, to the extent that the Office Action asserts that the thin-walled section 37 and mandrel 18 are made to be integral and unitary merely by their assembly, Applicants again disagree. As assembled, the thin-walled section 37 and mandrel 18 are placed in contact, but do not form a single integral unitary metal member. Rather, the components of Brecz, et al. do not have "the character of a single thing that is a constituent of a whole" but are instead dual, separate components with different characteristics.¹ Indeed, the Office Action compared the

¹ The term unitary is defined as follows:

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integrated configuration of Claim 1 with a "single unitary piece" in order to illustrate that Claim 1 does not exclude the prior art. ("With this in mind, the stem being integrated with the deformable head does not require them to be formed as a single unitary piece but is instead broad enough to read on arrangement of both B[]recz and Lyon where the stem and deformable head are separate pieces "integrated" together in the assembled state." Office Action, page 7.) While Applicants disagree with the comparison of Claim 1 to the prior art, it is respectfully submitted that amended Claim 1 defines over the prior art for the same reasons as the "single unitary piece" referred to by the Examiner. Further, since the amendment to Claim 1 is the same as that which has apparently already been considered by the Examiner, Applicants submit that no new issues are raised.

Therefore, Applicants respectfully submit that Claim 1 is allowable over Brecz, et al., as are each of the dependent Claims 4-7 and Claims 39-40. In addition, the dependent claims provide further bases of distinction over Brecz, et al. For example, Claim 39 recites that "the deformable first head is configured to contact no more than one of the structural members when installed." The Office Action states that this recitation is only "an intended use limitation of which B[]recz would be capable." Office Action, page 4. However, Applicants respectfully disagree on the basis that (a) it is unclear that the recited feature is possible with the device disclosed by Brecz, et al. and (b) there is no motivation to modify Brecz, et al. to achieve this feature. Relevant to both of these points is the disclosure of Brecz, et al., which specifically states that a contrary configuration is provided:

It is significant that the composite core 11 is fully contained by the sheath 34 during blind head formation so that the sheath 34 is initially expanded radially outwardly by the

1 : having the character of a single thing that is a constituent of a whole; *specifically* : of, relating to, or being a business with subsidiaries in other states or nations that has its state income tax figured by including the subsidiaries' income, determining the portion of that income attributable to activities within the state, and taxing that percentage <a unitary business operating throughout the U.S.> <imposed a unitary tax on a multinational corporation>
 2 : marked by unity : not dual or segregated : INTEGRATED 3 <a unitary school district> —
 uni-tar-i-ness noun

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resultant hydrostatic pressure of the composite core 34. To that end, it is desirable for the sheath 34 to extend substantially through the entire thickness of workpieces 30 and 32, as illustrated in the drawings.

Brecz, et al. at col. 3, line 63 – col. 4, line 2. Thus, the thin-walled section 37 of Brecz, et al. (which corresponds to the claimed deformable first head according to the Office Action) is configured to contact both of the structural members when installed. Accordingly, Applicants submit that the Claim 39 is allowable over Brecz, et al. for this additional reason.

Similarly, Brecz, et al. fails to disclose a composite-metal hybrid fastener with two heads that are connected to the shank, as recited in independent Claim 11, and, therefore, Claims 11-25 and 41-43 are allowable for similar reasons.

Regarding the rejections set forth under § 103, Applicants traverse the rejection of Claim 1 as being unpatentable over Lyon in view of Gapp, and various dependent claims as being unpatentable over the Lyon and Gapp (with Pratt or Keener for some of the dependent claims). As set forth above, Claim 1 is directed to a composite-metallic hybrid fastener that includes (a) a metallic stem defining a shank and a deformable head at one end of the shank that is integral and unitary with the shank and (b) a composite sleeve. Like Brecz, et al., described above, Lyon does not disclose a metallic stem having a shank and a deformable head that is integrated with the shank. To the contrary, the mandrel 58 and the “B” stage thermoset resin head forming portion 62 (which are indicated in the Office Action to correspond to the claimed stem and deformable head) are two separate parts that are not defined by a common stem as claimed. In fact, Lyon teaches that the head forming portion 62 is formed of a “B” stage thermoset resin that can be softened by heating, not of metal or as a part of any metal stem.

Moreover, Lyon fails to disclose the claimed invention of a hybrid fastener that includes a metallic stem defining an integral unitary deformable head and a composite sleeve that defines a second head. Neither the claimed configuration nor the significance of such a configuration (which is described in the present application at page 2, line 30 – page 3, line 10 and page 11, line 22 – page 12, line 20) is taught or suggested by any of the cited references, alone or in

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combination. In other words, even if Lyon were modified as set forth in the Office Action, the resulting structure would not satisfy each of the elements of Claim 1. Therefore, Claim 1 and the claims depending therefrom are allowable. For the same reasons, the cited references also fail to teach or suggest a composite-metal hybrid fastener having two heads that are connected to a shank, as recited in independent Claim 11. Therefore, Claims 11-25 and 41-43 are allowable for similar reasons.

For the reasons set forth above, Applicants respectfully submit that all of the rejections are overcome and the pending Claims 1-25 and 39-42.

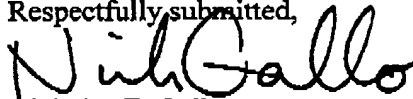
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CONCLUSION

In view of the above remarks, Applicants submit that the pending claims are now in condition for allowance. Applicants respectfully request that the claims be allowed to issue. If the Examiner wishes to discuss the application or the comments herein, the Examiner is urged to contact the undersigned by telephone.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,




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